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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/863,823 | 05/23/2001 | D. Wade Walke | LEX-0180-USA | 8988 |

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| EXAMINER | |
|---|---|
| HAMUD, FOZIA M | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1647 | |

DATE MAILED: 09/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

File Copy

# Office Action Summary

| Application No. | Applicant(s) |
|---|---|
| 09/863,823 | Walke et al. |
| **Examiner** | **Art Unit** |
| Fozia Hamud | 1647 |

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) [X] Responsive to communication(s) filed on *Oct 11, 2001*.

2a) [ ] This action is **FINAL.** 2b) [X] This action is non-final.

3) [ ] Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

**Disposition of Claims**

4) [X] Claim(s) *1-5* is/are pending in the application.

4a) Of the above, claim(s) *5* is/are withdrawn from consideration.

5) [ ] Claim(s) _____ is/are allowed.

6) [X] Claim(s) *1-4* is/are rejected.

7) [ ] Claim(s) _____ is/are objected to.

8) [ ] Claims _____ are subject to restriction and/or election requirement.

**Application Papers**

9) [ ] The specification is objected to by the Examiner.

10) [ ] The drawing(s) filed on _____ is/are a) [ ] accepted or b) [ ] objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) [ ] The proposed drawing correction filed on _____ is: a) [ ] approved b) [ ] disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) [ ] The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13) [ ] Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) [ ] All b) [ ] Some* c) [ ] None of:

1. [ ] Certified copies of the priority documents have been received.
2. [ ] Certified copies of the priority documents have been received in Application No. _____.
3. [ ] Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) [X] Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) [ ] The translation of the foreign language provisional application has been received.

15) [ ] Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) [ ] Notice of References Cited (PTO-892)
2) [ ] Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) [X] Information Disclosure Statement(s) (PTO-1449) Paper No(s). 6
4) [ ] Interview Summary (PTO-413) Paper No(s). ____
5) [ ] Notice of Informal Patent Application (PTO-152)
6) [ ] Other:

## DETAILED ACTION

***Election/Restriction***

Applicants are advised that claim 1 is an improper Markush claim because the multiple elements recited therein are nucleic acids molecules encoding polypeptides of SEQ ID Nos: 2, 4, 6 or 8, which do not share a common technical feature which is based on a common property or special technical feature not found in the prior art. This constitutes a recitation of an implied, mis-joined Markush group that contain multiple, independent and distinct inventions. Each of the nucleic acids are independent and distinct because no common structural or functional properties are shared.

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

   I. Claims 1-4, drawn to an isolated nucleic acid encoding the polypeptide comprising the amino acid sequence set forth in SEQ ID NOs: 2, 6, classified in class 435, subclass 69.1, (SEQ ID NO:5 encodes both SEQ ID Nos: 2 and 6. SEQ ID NO:1 is contained within SEQ ID NO:5, i.e SEQ ID NO:1 represents an internal ATG within SEQ ID NO:5).

   II. Claims 1, 5, drawn to an isolated nucleic acid which encodes the polypeptide comprising amino acid sequence set forth in SEQ ID NO:8, classified in class 435 subclass 69.1.

The inventions are distinct, each from the other because of the following reasons:

Inventions I-II are independent and distinct, each from the other, because they are products which possess characteristic differences in structure and function and each has an independent biological activity, that is distinct for each invention which cannot be exchanged. Nucleotide sequences encoding different proteins are structurally distinct chemical compounds and are unrelated to one another. These sequences are thus deemed to normally constitute independent and distinct inventions within the meaning of 35 U.S.C. 121. Absent evidence to the contrary, each such nucleotide sequence is presumed to represent an independent and distinct invention, subject to a restriction requirement pursuant to 35 U.S.C. 121 and 37 CFR 1.141, (see MPEP 2434 and 803.04).

Having shown that these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification and recognized divergent subject matter as defined by MPEP § 808.02, the Examiner has prima facie shown a serious burden of search (see MPEP § 803). Therefore, an initial requirement of restriction for examination purposes as indicated is proper.

2. During a telephone conversation with Lance Ishimoto's office on 16 September 2002, a provisional election was made with traverse to prosecute the invention of Group I (claims 1-4). Affirmation of this election must be made by applicant in responding to this Office action.

Claim 5 is withdrawn from further consideration by the Examiner, 37 C.F.R. § 1.142(b), as being drawn to a non-elected invention, claim 1 will be searched and examined in so far as it pertains to nucleic acid molecules encoding SEQ ID Nos: 2 and 6.

Applicant is advised that the response to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventor ship must be amended in compliance with 37 C.F.R. § 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventor ship must be accompanied by a diligently-filed petition under 37 C.F.R. § 1.48(b) and by the fee required under 37 C.F.R. § 1.17(h).

***Claim objections:***

3. Claim 1 is objected to because of the following informalities: claim 1 recites "....at....." in line 1, after comprising, which appears to be a typographical error. Appropriate correction is requested.

***Claim Rejections - 35 U.S.C. § 101/112***

4. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4a. Claims 1-4 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility.

Claims 1-4 of the instant invention are directed to isolated nucleic acid molecule comprising a nucleotide sequence encoding the polypeptide comprising the amino acid sequence set forth in SEQ ID NO:2 or 6, and an isolated nucleic acid encoding the polypeptide comprising the amino acid sequence set forth in SEQ ID NO:2 that also hybridizes under stringent conditions to the nucleotide

sequence set forth in SEQ ID NO:1. The specification describes the claimed nucleic acid molecule as encoding novel human proteins (NHPs) which have structural similarity with eukaryotic membrane and secreted proteins, including , but not limited to neural cell adhesion molecules (NCAM), tyrosine kinase receptors and vascular endothelial growth factor (VEGF) receptors, (page 1, lines 25-31 and page 2, lines 1-6). Instant specification discloses a deduced amino acid sequences for the NHP encoded by the claimed nucleic acid and states that the NHPs can be expressed in several human tissues, but mainly in the kidney, as well as gene trapped human cells, (see page 16, lines 15-21). The specification further describes the NHP encoded by the claimed nucleic acid as sharing significant similarity with neural cell adhesion molecules, via the Ig-like domain, (see page 16, lines 23-24). However, instant specification does not disclose how much structural similarity is there between the claimed protein and NCAMs, and whether the claimed protein has activity and biological function similar to that of NCAM. Furthermore, Applicants do not establish whether having an Ig-like domain assures a specific function and activity for the NHP encoded by the claimed nucleic acid. It is also unclear whether the NHP encoded by the claimed nucleic acid has more structural and functional identity to the NCAMs than it is to the tyrosine kinase receptors or VEGF receptors. Instant specification does not provide any information regarding physiologic or functional characteristics of NHPs, encoded by the claimed nucleic acid molecule. Furthermore, the NHP encoded by the claimed nucleic acid has never been expressed, no biological activity was assayed or determined for it and only it's deduced amino acid sequence and general methods of expressing recombinant proteins is disclosed. Instant specification asserts that the claimed nucleic acid

sequences can be utilized in micro arrays or other assay formats to screen of genetic material from patients who have particular medical condition, (see page 7, lines 24-28). However, the particular medical conditions that can be diagnosed using the claimed nucleic acid are not disclosed, thus the skilled artisan would not know which medical conditions, can be diagnosed using the claimed nucleic acid or the encoded protein. While, the instant specification asserts that the NHP encoded by the claimed nucleic acid can be used to treat disorders, and discloses conventional protein administration techniques, it does not disclose specific diseases which can be treated or diagnosed using the NHP protein encoded by the claimed nucleic acids. The specification establishes no connection between any physiological condition or disorder and this protein, i.e, is the NHP of the instant application over expressed, under expressed or completely lacking in any disorder? The specification provides no working examples as to the activity of the NHP encoded by the claimed nucleic acids, and one of ordinary skill in the art would not be able to predict what activity would be possessed by the protein of the instant application based solely because it might be related mammalian neural cell adhesion molecules (NCAM), tyrosine kinase receptors or vascular endothelial growth factor (VEGF) receptors.

Furthermore, members of each of the above-mentioned protein families have disparate but equally important functions, for example, the proper development of the CNS depends upon the temporally and spatially-regulated expression of cell adhesion molecules (CAMs), several families of membrane proteins which are particularly important for pathway development, establishment of appropriate synaptic. Failure of NCAMs to function appropriately during development results in a

spectrum of deficits ranging from gross malformations to subtle psychomotor retardation. Tyrosine kinase receptors are a family of receptors with a similar structure, which are very important for signaling by certain hormones (insulin) and by a number of signals that control our development (e.g. fibroblast growth factors). Finally, Vascular endothelial growth factor (VEGF), a potent mitogen of endothelial cells, is produced in elevated amounts by many tumors, including ovarian carcinomas, and induces angiogenesis and endothelial cell proliferation upon binding to its receptor, it also plays an important role in regulating vasculogenesis. Thus, one of skill in the art would not be able to predict which of these functions or activities would the NHP encoded by the claimed nucleic acid exhibit, therefore, the specific biological role of the claimed protein can not be ascertained. Instant specification does not disclose any information regarding the biological activity or functional data of the protein encoded by the claimed nucleic acid, therefore, using it as a research tool to develop therapeutics does not provide it with a substantial or specific utility, because, one of ordinary skill in the art would not know which diseases to target. Another asserted utility is to use the claimed nucleic acid and the encoded protein as reagents in diagnosis assays for the identification of other cellular gene products related to NHP, however, since the specification fails to disclose any physiological condition or specific disorders that this nucleic acid and the protein it encodes are involved in, this utility is neither substantial nor well-established. Therefore, the claimed nucleic acid and the encoded polypeptide do not have a substantial utility because basic research is required to study the properties and activity of the claimed polynucleotide and the encoded protein.

The claimed invention is directed to a polynucleotide encoding a polypeptide of as yet undetermined function or biological significance, therefore, unless Applicants demonstrate the physiological significance or the biological role of the instant polynucleotide and the protein it encodes, the claimed invention is not supported by either a specific and substantially asserted utility or a well established utility.

4b. Claims 1-4 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention. Instant specification only discloses the structure of the nucleic acid molecule of SEQ ID NO:5 and 1, and discloses a deduced amino acid sequence for the encoded proteins, however, it does not disclose an activity for the encoded protein, and only states that it shares structural similarity with neural cell adhesion molecules (NCAM), tyrosine kinase receptors or vascular endothelial growth factor (VEGF) receptors. Therefore the skilled artisan would not know how to use the nucleic acid molecule of SEQ ID NO:1, 5 or the encoded proteins.

**The following is a quotation of the second paragraph of 35 U.S.C. 112:**

> **The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.**

5. Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5b. Claim 2 is indefinite because the claim recites "..... hybridizes under stringent conditions....", which is a conditional term and renders the claim indefinite. Furthermore, some nucleic acids which might hybridize under conditions of moderate stringency, for example, would fail to hybridize at all under conditions of high stringency. This rejection could be obviated by supplying specific conditions supported by the specification which Applicants consider to be "stringent."

***Conclusion***

No claim is allowed.

***Advisory Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fozia Hamud whose telephone number is (703) 308-8891. The examiner can normally be reached on Mondays-Thursdays from 8:00AM to 4:30PM (Eastern time).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary kunz can be reached at (703) 308-4623.

Official papers filed by fax should be directed to (703) 308-4227. Faxed draft or informal communications with the examiner should be directed to (703) 308-0294.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0196.

Fozia Hamud
Patent Examiner
Art Unit 1647
18 September 2002

YVONNE EYLER
SUPERVISORY PATENT
TECHNOLOGY